

### EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Christopher P. Bruenjes on March 23, 2011.

The application has been amended as follows:

#### Claim 1

A coated steel product comprising:  
a metallic strip material, the thermal expansion coefficient of said metallic strip material being less than  $12 \times 10^{-6} \text{ K}^{-1}$  in the temperature range 0-600°C,  
wherein the metallic strip material has a coating comprising an electrically insulating oxide layer, ~~doped with an alkali metal or a mixture of alkali metals,~~  
~~the thermal expansion coefficient of said metallic strip material being less than  $12 \times 10^{-6} \text{ K}^{-1}$  in the temperature range 0-600°C,~~  
the electrically insulating oxide layer comprising at least one oxide layer consisting essentially of a dielectric oxide selected from the group consisting of  $\text{Al}_2\text{O}_3$ ,  $\text{TiO}_2$ ,  $\text{HfO}_2$ ,  $\text{Ta}_2\text{O}_5$  and  $\text{Nb}_2\text{O}_5$  or mixtures of these oxides doped with an alkali metal or a mixture of alkali metals.

#### Claim 3

Coated steel product according to claim 1, wherein, characterized in that the electrically insulating oxide layer has a multi-layer constitution of 2 to 10 sublayers.

#### Claim 4

Coated steel product according to claim 3, each individual oxide sublayer has a thickness of between 0.01 and 2  $\mu\text{m}$ .

#### Claim 5

Coated steel product according to claim [1] 3, wherein only the sublayer, or the two sublayers, most distal from the metallic strip substrate is/are are doped with alkali metal(s).

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**Claim 6**

Coated steel product according to claim 1, wherein a total thickness of the ~~oxide coating may be~~ electrically insulating oxide layer is up to 20  $\mu\text{m}$ .

**Claim 10**

Coated steel product according to claim 3, wherein the individual sublayers in the multi-layer structure are either made of the same metal oxide or of different metal oxides and that each individual layer is made of one metal oxide or of a mixture of two or more metal oxides.

**Claim 12**

Method for producing a coated steel product according to claim 1, wherein the electrically insulating oxide layer(s) and ~~the~~ at least one electrically conducting layer(s) are all deposited in a roll-to-roll electronic beam evaporation process.

**Claim 16**

Coated steel product according to claim 1, wherein the electrically insulating oxide layer has a multi-layer constitution with an electrically insulating effective number of sublayers.

**Claim 17**

Coated steel product according to claim 4, wherein the thickness of each individual oxide sublayer is between 0.1 and 1.5  $\mu\text{m}$ .

**Claim 18**

Coated steel product according to claim 6, wherein the total thickness of the ~~oxide coating~~ electrically insulating oxide layer is 1 to 5  $\mu\text{m}$ .

The following is an examiner's statement of reasons for allowance:

Regarding amended independent **claim 1**, the closest prior art is **Koshiba** (US 5,187,033). Fukuwara et al. (US 5,112,704), henceforth **Fukuwara**, is used as a secondary reference.

Koshiba teaches a rechargeable lithium secondary battery (1:5-6). Koshiba (figure 1) teaches a negative current collector (7), which is made of SUS 304 stainless steel (5:45-57). Koshiba's negative current collector is the claimed metallic strip. While

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SUS 304 stainless steel does not have a thermal expansion coefficient in the claimed range, it would have been obvious to substitute SUS 430 stainless steel in its place because Fukuwara teaches using SUS 430 stainless steel in the same context (5:12-14, figure 1:7). SUS 430 stainless steel has a range of thermal expansion coefficients within the claimed range.

Koshiba (figure 1) teaches a negative electrode (5) made of  $\text{Nb}_2\text{O}_5$  doped with Li (2:5-7), which is an alkali metal. Koshiba's negative electrode is the claimed oxide layer.

The allowable feature that Koshiba does not teach is an *electrically insulating* oxide layer. Koshiba's oxide layer is an electrode. As such, its role is electrical conduction with regard to the current collector (7), which is the metal strip. Therefore, Koshiba's oxide layer cannot be *electrically insulating* as claimed and making it so would destroy Koshiba's battery.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Magali P. Slawski whose telephone number is (571) 270-3960. The examiner can normally be reached on Monday through Thursday, 9 a.m. to 5 p.m. EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer K. Michener can be reached on (571) 272-1424. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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